



Chapter 5

Implementation

Previous chapters of this plan have presented the concepts and details for the Lewis and Clark Multi-Use Trail, designed to serve the people and places of Western Iowa. The plan suggests routes, design guidelines and an information plan for interpretive markers throughout the trail network.

This chapter considers several factors necessary for plan implementation, including:

- **Organizational Structure**
- **Priority Criteria**
- **Projected Development Costs**
- **Funding Techniques**
- **Management & Maintenance Plan**

Trail Development

Fundraising by the Foot

Buy-a-Foot-of-Trail campaigns are becoming increasingly popular. While fundraising with this method is difficult for long rural trail routes, marketing a short stretch of highly visible, trail near an urban area or point of interest is much more realistic.

The Greenway Foundation of Jackson County Oregon has integrated this approach into their usual fundraising events of membership drives, silent auctions, and direct appeals. For the last four years the Foundation has held a successful Great Bear Greenway Yard Sale, allowing a person to purchase a symbolic “yard” of the trail for \$40. A future permanent marker at each trailhead will bear the name of the donor and the section to which they contributed.



Bear Creek Greenway between Central Point and Ashland, Oregon. Courtesy www.riverwalk-ashland.com

IMPLEMENTATION

Previous chapters of this plan have presented the concepts and details for the Lewis and Clark multi-use trails, designed to serve the people and places of Western Iowa. The plan suggests routes, design guidelines, and an information plan for interpretive markers throughout the trails network. This chapter considers several factors necessary to plan implementation, including:

- Organizational structure.
- Priority criteria.
- Projected development costs.
- Funding techniques.

Organizational Structure

Successful trail implementation efforts require successful partnerships between the state agencies, local governments, and community organizations. Since the implementation of the Iowa Trails 2000 Plan, the Iowa DOT has been the catalyst for planning and initiating statewide trail projects. The Iowa DOT has led many trail development initiatives across the state, including this use master plan; however, given the economic realities, implementation must use many funding sources.

To implement the LCT Plan, local governments, county conservation boards, and non-profit organizations must work closely with the Iowa DOT and its district offices.

Role of Agencies in Trail Implementation

Developing the Lewis and Clark Multi-Use Trail will be a cooperative effort between various agencies, communities, and organizations. Different groups have specific responsibilities. Table 4.1 illustrates the potential roles that various organizations play in the implementation process.

Iowa Department of Transportation. The Iowa DOT can be a significant source of funding for trail development. The Iowa DOT offers planning and design assistance, as well as financial guidance. Final trail plans for any project that receives Iowa DOT funding must be approved by the department.

The Iowa DOT’s district offices will be the primary point of contact for county and local agencies implementing parts of the LCT. District offices can guide applicants through the department’s funding process and offer programming assistance.

For the Lewis and Clark multi-use trails, the Iowa DOT will focus on projects such as paving of shoulders and side paths along state and federal highways. Trail projects along other right-of-ways, such as county roads, will be the responsibility of local agencies and private organizations.

Iowa Department of Natural Resources. The DNR maintains a system of multi-use trails within state parks, recreation areas, and forests. The office also provides financial and management assistance to communities to build trails linking state parks to neighboring communities. Additional assistance is also provided by the DNR for the planning of additional trails projects for Off-Highway Vehicles (OHV), canoes/kayaks, and snowmobiles.

Metropolitan Planning Organizations & Regional Planning Affiliations. In many cases, MPOs and RPAs staff may assist member governments in the planning and grant writing efforts, but it is the county or city who will initiate the efforts since they are ultimately the trail owners.

County Conservation Boards. County Conservation Boards are charged with the acquisition, development, operation, and maintenance of county recreation, preservation, and interpretive facilities. As such, they often act at the primary developers and operators of local trails. Some state and federal grants for trails are specifically geared towards projects being implemented by County Conservation Boards.

Table 4.1: Implementation Matrix

	Offers funding guidance	Can provide primary funding for trail projects	Can contribute local funding match	May oversee detailed design of trail projects	Reviews trail plans	May oversee construction of trails	May perform operations & maintenance of trails	Offers design & construction guidance	Offers technical assistance
Iowa DOT	*	*		*	*	*	*	*	*
Iowa DOT - District Offices	*							*	
Iowa DNR	*	*	*	*	*	*	*	*	*
MPOs and RPAs	*			*	*			*	*
County Conservation Boards		*	*	*		*	*		
Local agencies, & organizations			*	*		*	*		
Other state agencies			*		*			*	*
Private organizations	*		*	*		*	*		*

Source: Iowa Trails 2000

Trail Development

Adventure Racing

Holding a local adventure race is a great way to involve future trail user groups in raising funds for trail completion. Ozark Greenways Inc. of Springfield, Missouri has held the Mark Twain Forest Adventure race for four consecutive years, combining running, canoeing, mountain / trail biking and orienteering. The adventure race is unique in combining user groups – both seasoned athlete and weekend warrior - while generating excitement and allowing future users a chance to explore areas not seen from major roads.

Coordinating such an event is no small task considering volunteers, emergency personnel, and post-race food preparation and management activities, however

it provides participants with unique knowledge of the area and also allows user groups to network, leading to greater collaboration in the future. For more info on the Mark Twain Forest Adventure race visit www.ozarkgreenways.org.



Ozark Greenways Adventure Race 2009.
Courtesy of www.runningmania.com

Local Governments, Communities, Agencies, and Organizations. These are the primary local developers and owners of specific trail projects. Local projects must involve municipal governments who are the recipients of any federal or state funds. They will be responsible for local coordination, public involvement, and design and final alignment.

Other State Agencies. Other agencies such as the Iowa Department of Economic Development or Iowa Department of Cultural Affairs can offer technical assistance for specific implementation. These organizations are important assets in tourism and promotional campaigns, producing brochures and conducting research on cultural resources along the trail.

Private Organizations. The Iowa Trails Council, Iowa Natural Heritage Foundation, and special interest clubs may coordinate implementation of portions of the LCT by partnering with local government entities. They also contribute funding or in-kind services that support trail development.

Priority Criteria

The Lewis and Clark multi-use trail plan covers six counties in Western Iowa. The Iowa DOT has made it a priority for these counties to focus on establishing the “Today Route” from Hamburg to Sioux City. Counties and local communities, with aid from coordinating agencies such as the Iowa DOT, DNR, and County Conservation Boards, will lead the LCT implementation effort. Completing the entire LCT will be an incremental process that requires setting priorities and evaluating new conditions along the way.

Once the basic “Today Route” is established, a county can turn its attention to enhancements or development of additional routes. Each county should evaluate proposed routes in view of maximum benefit to the county and its people. Evaluative criteria apply questions such as the following to specific projects when they are considered.

- Does the project connect important resources, such as state parks to neighboring communities?
- Does the project generate substantial community support or consensus?
- What is the project’s potential to transform the image of the area or individual communities?
- Does the project respond to a specific or high-profile need for improved trail facilities?
- Does the project incorporate and leverage outside funding sources, such as state grants or charitable contributions?
- Does the project provide a link to other sections of the LCT being implemented in neighboring counties?
- Does the project yield substantial economic development opportunities?

The key to successful implementation will be to establish priorities based on the specific benefits of the project.

Projected Development Costs

Financing construction of the LCT will require federal, state, local, and private resources. Project staging is also needed to manage the ongoing capital requirements of individual components. The following cost descriptions describe the methods and costs associated with the various LCT prototypes.

Cost Descriptions

Paved Roads as Shared Routes. Adaptation of shared routes is estimated at \$6,000 per mile, based on the following items: one “sharrow” lane marking per mile, three “Share the Road” signs and two Lewis and Clark Trail signs per mile, and one directional sign every two miles. This is also considered the base LCT sign package for the rest of the route descriptions. A 10 percent design and engineering fee is added for the placement of all signs.

Paved Road with Shoulders/Bike Lane. The cost of this treatment is estimated at \$369,000 per mile, accounted for by adding six feet of paving on either side of the roadway. A 20 percent design and engineering fee is added due to the need to extend culverts and re-grade the road corridor. Painting and striping of the shoulder, along with the addition of the basic LCT sign package, delineates the shoulder as a bicycle-friendly zone. Finally, native seeding is placed on all disturbed areas to promote healthy roadway ecosystems.

Existing Paved Road with Side Path. This treatment is estimated at \$470,000 per mile, the bulk of which comes from paving a 10-foot wide roadside concrete trail. Between 10- and 25-feet of right-of-way (ROW) acquisition is included with an average acquisition cost of \$15,000 per acre. A 20 percent design and engineering fee (of the total cost per mile) is added, along with an allowance to extend culverts and grade the site in areas where ROW acquisition is difficult. The basic LCT sign package and native seeding are also included.

Existing Gravel Road at Shared Routes. An estimated cost of \$2,000 per mile is based on three “Share the Road” signs and two Lewis and Clark Trail signs per mile, and a 10 percent design and engineering allowance.

Existing Gravel Road with Side Path. A cost of \$229,000 per mile includes a 10-foot wide granular-surface trail, 10- to 25-feet of ROW acquisition, a 20 percent design and engineering fee, culvert extensions, and grading. Acquisition is either difficult or constrained. Typical highway guardrails are used to separate the pathway from vehicular traffic. The basic LCT sign package and native seeding are also included.

Paving Existing Gravel Roads. Paving is estimated at \$584,000 per mile. Most of this cost comes from the paving of a 22-foot wide concrete roadway, along with a 20 percent design and engineering fee. Minor grading, painting/striping the new roadway, the basic LCT sign package, and native seeding are also included.

DNR Land Off-Road Trail. Costs are estimated at \$105,000 per mile, including a 10-foot wide granular-surface trail and the acquisition of 30-feet of ROW (3.6 acres of land per mile at \$15,000 per acre). As this trail will most likely be placed in areas outside of any existing ROW, a 20 percent design and engineering fee is added to plan for the eventual grading that will be needed. The basic LCT sign package and native seeding are also included.

New Separated Trail. These costs are the same as those estimated for off-road trails on or adjacent to public land.

New Trail on Levee. Cost is estimated at \$142,000 per mile, including a 10-foot granular-surface trail, acquisition of 20-feet of ROW, a 20 percent design and engineering fee, and the basic LCT sign package with native seeding.

Trail Development Costs at a Glance

The following tables review the cost of total LCT development on a county-by-county basis. Estimates are in 2010 dollars and do not account for inflation.



Today Route	Total Mileage	Cost
Woodbury County	25.6	\$154,000
Monona County	37.7	\$178,000
Harrison County	62.6	\$376,000
Pottawattamie County	28.3	\$170,000
Mills County	28.5	\$171,000
Fremont County	25.2	\$152,000
Today Route Total:	207.9	\$1,201,000

Explorers & Express Routes	Total Mileage	Cost
Woodbury County	34.9	\$8,912,300
Monona County	58.3	\$9,151,300
Harrison County	85.3	\$12,638,700
Pottawattamie County	39.9	\$13,266,300
Mills County	36.9	\$8,104,200
Fremont County	52.3	\$14,173,200
Explorers & Express Routes Total:	307.6	\$66,246,000

Loops	Total Mileage	Cost
Woodbury County	-	-
Monona County	31.3	\$187,800
Harrison County	13.1	\$3,662,200
Pottawattamie County	-	-
Mills County	5.2	\$1,935,000
Fremont County	19.6	\$3,322,000
Loop Totals:	69.2	\$9,107,000

Woodbury County Development Costs

Woodbury County Summary	Total Mileage	Cost
Explorers Route	26.2	\$6,609,500
Express Routes	8.7	\$2,302,800
Snyder Bend Loop	-	Included
Woodbury County Total:	34.9	\$8,912,300



Stone State Park - Sioux City

LCT Explorers Route	Express Routes	Alternate LCT Routes	Loops	Links	Map Key #	Segment	Existing Paved Road; Add Signage	Existing Paved Road; Add Paved Shoulder	Existing Paved Road; Add Sidepath	Existing Gravel Road; Add Signage	Existing Gravel Road; Add Sidepath	Existing Gravel Road; Pave Road	DNR Land; Add Trail	New Separated Trail; Secure ROW	New Trail on Levee; Secure ROW	Existing Facilities	Segment Cost
					1e	Riverside Boulevard (Iowa 12), Dorothy Picault Nature Center at Stone State Park to Riverside Park			3.6								\$1,692,000
					2e	Sioux City Riverfront Trail from Riverside Park (existing terminus) to Floyd Boulevard										4.1	\$0
					3e	Extension of Floyd River Trail from current trail terminus to Dace Avenue.								0.1			\$10,500
					4e	Dace/Leech Avenue, Floyd River Trail to old channel	0.7										\$4,200
					5e	Old Floyd channel from Leech Avenue to riverfront								0.9			\$94,500
					6e	Riverfront Trail extension from mouth of old channel to terminus of existing trail south of railroad bridge								0.5			\$52,500
					7e	Riverfront Trail from existing terminus to Chautauqua Park										1.9	\$0
					8e	Harbor Drive, Chautauqua Park to Singing Hills Blvd.			0.9								\$423,000
					9e	Harbor Drive/I-29 right-of-way, Singing Hills Boulevard to 8 th Street								2.1			\$220,500
					10e	8 th Street, Harbor to D Street	0.5										\$3,000
					11e	D Street, 8 th to Topaz Drive	0.8										\$4,800
					12e	Topaz Drive, D to Port Neal Road	0.3										\$1,800
					13e	Port Neal Road (K25), Topaz Drive to 225 th Street		1.2									\$442,800
					14e	Port Neal Road (K25), 220 th Street to Brown's Lake		4.6									\$1,697,400
					15e	Brown's Lake to Snyder-Winnebago Bend (330th Street)							6.9				\$724,500
					16e	330 th Street Alignment, Winnebago Bend to WiineVegas Casino								0.6			\$63,000
					17e	K35/Iowa 141(330 th Street), WinneVegas Casino to Sloan			2.5								\$1,175,000
					1x	K25, Brown's Lake to Salix	2.5										\$15,000
					2x	K45, Salix to Sloan		6.2									\$2,287,800
					Totals		4.8	12.0	7.0	0.0	0.0	0.0	6.9	4.2	0.0	6.0	\$8,912,300

Monona County Development Costs

Monona County Summary	Total Mileage	Cost
Explorers Route	34.2	\$4,928,500
Express Routes	24.1	\$4,222,800
Blackbird Loop	1.8	\$10,800
Blue Lake Loop	-	Included
Larpenteur Loop	29.5	\$177,000
Monona County Total:	89.6	\$9,339,100



Monona County Courthouse - Onawa

LCT Explorers Route	Express Routes	Alternate LCT Routes	Loops	Links	Map Key #	Segment	Existing Paved Road; Add Signage	Existing Paved Road; Add Paved Shoulder	Existing Paved Road; Add Sidepath	Existing Gravel Road; Add Signage	Existing Gravel Road; Add Sidepath	Existing Gravel Road; Pave Road	DNR Land; Add Trail	New Separated Trail; Secure ROW	New Trail on Levee; Secure ROW	Existing Facilities	Segment Cost
					18e	K42, Iowa 141 to 160th Street	6.6										\$39,600
				19e	Berry Avenue, 160th to 170th Street						1.1						\$251,900
				20e	170th Street, Berry Avenue to riverfront						0.6						\$137,400
				21e	Riverfront, 170th to Blackbird Island									2.6			\$273,000
				22e	Blackbird/Ivy Island WMA (DNR land) to 230th Street.								5.2				\$546,000
				23e	230th Street, Blackbird/Ivy Island WMA to Iowa 175						1.5						\$343,500
				3x	K42, Berry Avenue to I-29 Whiting interchange	2.2											\$13,200
				4x	K42, Whiting interchange to 210th Street	5.4											\$32,400
				5x	K42 (210th Street), Cherry Avenue to Dogwood Avenue	1.8											\$10,800
				24e	Iowa 175, Cherry Avenue to Dogwood Avenue		0.4									0.9	\$147,600
				1L	Cherry Avenue, K42 to Iowa 175	1.8											\$10,800
				2L	Dogwood Avenue, Iowa 175 to K42			1.7								\$799,000	
				25e	Blue Lake WMA, Iowa 175 to Filbert Avenue							2.0				\$210,000	
				26e	Filbert Avenue, Lewis and Clark State Park to Louisville Bend WMA					2.9						\$664,100	
				27e	Louisville Bend WMA and riverfront, between north and south segments of Filbert Avenue							3.0	0.8			\$399,000	
				28e	Filbert Avenue/320th Street/Gum Avenue from north terminus of Filbert to Monona-Harrison County line					4.1						\$938,900	



Monona County Historical Museum - Onawa



Downtown Onawa - The widest Main Street in America.

Continued:

LCT Explorers Route	Express Routes	Alternate LCT Routes	Loops	Links	Map Key #	Segment	Existing Paved Road; Add Signage	Existing Paved Road; Add Paved Shoulder	Existing Paved Road; Add Sidepath	Existing Gravel Road; Add Signage	Existing Gravel Road; Add Sidepath	Existing Gravel Road; Pave Road	DNR Land; Add Trail	New Separated Trail; Secure ROW	New Trail on Levee; Secure ROW	Existing Facilities	Segment Cost
					6x	K42, Dogwood Avenue to 10th Street (K45) in Onawa			3.0								\$1,410,000
					7x	K45, K42 to E60 at Blencoe		7.4									\$2,730,600
					8x	K45, Blencoe to Monona/Harrison County Line	4.3										\$25,800
					3L	Union Pacific property, K45 to Gum Avenue								1.7			\$178,500
					1t	L12, Iowa 175 to Larpentuer Memorial Road	6.3										\$37,800
					2t	Larpentuer Memorial Road, L12 to E54	9.4										\$56,400
					3t	Larpentuer Memorial Road, E54 to Iowa 183 at Moorhead	6.6										\$39,600
					4t	Iowa 183, Moorhead to F20 at Pisgah	7.2										\$43,200
Totals							51.6	7.8	4.7	0.0	10.2	0.0	10.2	5.1	0.0	0.9	\$9,339,100

Harrison County Development Costs

Harrison County Summary	Total	
	Mileage	Cost
Explorers Route	52.8	\$9,772,700
Express Routes	27.0	\$2,866,000
Tyson Loop	5.0	\$35,400
DeSoto Loop	7.2	\$3,626,800
Regional Connections	7.9	\$4,077,800
Harrison County Total:	99.9	\$20,378,700



Rural Harrison County

LCT Explorers Route	Express Routes	Alternate LCT Routes	Loops	Links	Map Key #	Segment	Existing Paved Road; Add Signage	Existing Paved Road; Add Paved Shoulder	Existing Paved Road; Add Sidepath	Existing Gravel Road; Add Signage	Existing Gravel Road; Add Sidepath	Existing Gravel Road; Pave Road	DNR Land; Add Trail	New Separated Trail; Secure ROW	New Trail on Levee; Secure ROW	Existing Facilities	Segment Cost
					29e	106 th Trail, County Line to Adams Trail					1.1						\$251,900
					30e	Adams Trail, 106 th Trail to north boundary of Deer Island WMA					1.4						\$320,600
					31e	Deer Island and Three Rivers WMA/Little Sioux Delta Park, Adams Trail to F20							4.4				\$462,000
					32e	F20, Three Rivers to K45			1.0								\$470,000
					9x	K45, County Line to F20	4.7										\$28,200
					33e	F20, K45 to Iowa 183 at Pisgah	7.9										\$47,400
					34e	Iowa 183, F20 at Pisgah to Iowa 127		8.9									\$3,284,100
					35e,11x	Iowa 127, Iowa 183 to K45 at Mondamin		3.3									\$1,217,700
					10x	K45, F20 at River Sioux to Mondamin	6.3										\$37,800
					1q	Soldier Bend WMA, 212 th to 222 nd Street	1.0			2.6			2.0				\$221,200
					2q	222 nd Street to 260 th Street				6.0							\$12,000
					36e	K45, Mondamin to 260 th Street	5.9										\$35,400
					37e	260 th Street, K45 to Tyson Bend					4.2						\$961,800
					38e	Tyson Bend Spur, 260th Street to Tyson Bend State WMA							2.2				\$231,000
					39e	US 30, Missouri River to De Soto NWR entrance/K45			4.1								\$1,927,000



Loess Hills Grasslands, Harrison County



Bunk House Cafe in Logan

Continued:

LCT Explorers Route	Express Routes	Alternate LCT Routes	Loops	Links	Map Key #	Segment	Existing Paved Road; Add Signage	Existing Paved Road; Add Paved Shoulder	Existing Paved Road; Add Sidepath	Existing Gravel Road; Add Signage	Existing Gravel Road; Add Sidepath	Existing Gravel Road; Pave Road	DNR Land; Add Trail	New Separated Trail; Secure ROW	New Trail on Levee; Secure ROW	Existing Facilities	Segment Cost
					1a	K45, 260 th Street to US 30	5.0										\$30,000
					2a	305 th Street/Jewell Avenue, K45 to Huron Street						6.2					\$3,620,800
					3a	Huron Street, Jewell Avenue to 6 th Street (L20 South)	1.0										\$6,000
					4a	Same as 14x											
					5a	Same as 15x											
					40e	De Soto Bend National Wildlife Refuge, US 30 to G12							3.2			2.0	\$336,000
					12x	L20, Iowa 127 to F50	6.8										\$40,800
					13x	L20, F50 to Huron Street		5.0									\$1,845,000
					14x, 4a	6 th Street (L20 south), Huron Street to Boyer River		1.4									\$516,600
					15x, 5a	Boyer River Levee, L20 to G12									2.8		\$179,200
					1r	US 30, 6 th Street in Missouri Valley to Niagara Trail			4.7								\$2,209,000
					2r	Niagara Trail, US 30 to F50						3.2					\$1,868,800
Totals							38.6	18.6	9.8	8.6	6.7	9.4	11.8	2.1	2.8	0.0	\$20,378,700

Pottawattamie County Development Costs

Pottawattamie County Summary	Total Mileage	Cost
Explorers Route	24.8	\$7,423,300
Express Routes	15.1	\$5,843,000
Wabash Loop	-	Included
Pottawattamie County Total:	39.9	\$13,266,300



Council Bluffs viewed from the Lewis & Clark Monument

LCT Explorers Route	Express Routes	Alternate LCT Routes	Loops	Links	Map Key #	Segment	Existing Paved Road; Add Signage	Existing Paved Road; Add Paved Shoulder	Existing Paved Road; Add Sidepath	Existing Gravel Road; Add Signage	Existing Gravel Road; Add Sidepath	Existing Gravel Road; Pave Road	DNR Land; Add Trail	New Separated Trail; Secure ROW	New Trail on Levee; Secure ROW	Existing Facilities	Segment Cost		
					41e	G12, De Soto NWR to L20 (Old Lincoln Highway)	6.4											\$38,400	
					42e	L20, G12 to G27 junction in Crescent		10.6											\$3,911,400
					43e	G27, Crescent to L19		0.6											\$221,400
					44e	L19 (Joslin Avenue), G27 to Monument Road					3.7								\$2,160,800
					45e	Monument Road, Joslin Avenue to Mynster Springs Road	1.1				0.7								\$415,400
					46e	Mynster Springs Road/8th Street, Monument Road to Big Lake Park Trail	0.2												\$1,200
					47e	Big Lake Park/Nash Boulevard Trail, 8th to 25th Street/Riverfront Trail		0.3	1.2									0.3	\$674,700
					48e	Riverfront Trail, 25th Street to Nebraska Avenue at Ameristar Casino												4.1	\$0
					49e	River Drive, Nebraska Avenue to I-80 Bridge												0.6	\$0
					50e	Riverfront Trail, I-80 to Indian Creek Trail												3.0	\$0
					51e	Indian Creek/Lake Manawa Trails, US 275 to Wabash Trace Trailhead												6.6	\$0
					16x	L20 (North Broadway/Ridge Street), Crescent to Pierce Street		6.8									\$2,509,200		
					17x	Pierce Street, Ridge to 1st Street	0.6											\$3,600	
					18x	1st Street, Pierce to West Broadway	0.1											\$600	



Union Pacific Railroad Museum - Council Bluffs



Bayliss Park - Council Bluffs

Continued:

LCT Explorers Route		Express Routes	Alternate LCT Routes	Loops	Links	Map Key #	Segment	Existing Paved Road; Add Signage	Existing Paved Road; Add Paved Shoulder	Existing Paved Road; Add Sidepath	Existing Gravel Road; Add Signage	Existing Gravel Road; Add Sidepath	Existing Gravel Road; Pave Road	DNR Land; Add Trail	New Separated Trail; Secure ROW	New Trail on Levee; Secure ROW	Existing Facilities	Segment Cost
						19x	West Broadway, 1st Street to Main Street	0.4										\$2,400
						20x	Main/Pearl Street to 9th Avenue	0.5										\$3,000
						21x	9th Avenue, Main to 3rd Street	0.2										\$1,200
						22x	3rd Street and Harry Langdon Boulevard to Wabash Trace extension		2.2									\$811,800
						23x	Wabash Trace Extension, Harry Langdon Boulevard to Wabash Trace Trailhead										1.1	\$0
						52e	Wabash Trace Nature Trail, Lewis Central Trailhead to Keg Creek and Mineola Trailhead										9.2	\$0
						24x	L31, South Omaha Bridge Road (Trailhead) to Iowa 370						4.3					\$2,511,200
						3r	Bob Kerrey Pedestrian Bridge										0.4	\$0
						4r	US 275 Trail and Veterans Memorial Bridge										2.7	\$0
Totals								9.5	20.5	1.2	0.0	0.0	8.7	0.0	0.0	0.0	28.0	\$13,266,300

Mills County Development Costs

Mills County Summary	Total Mileage	Cost
Explorers Route	22.2	\$4,180,200
Express Routes	14.7	\$3,924,000
Wabash Loop	3.4	\$1,367,400
Pacific Loop	1.8	\$567,600
Regional Connections	7.6	\$2,435,200
Mills County Total:	49.7	\$12,474,400



McCormick Station - Glenwood

LCT Explorers Route	Express Routes	Alternate LCT Routes	Loops	Links	Map Key #	Segment	Existing Paved Road; Add Signage	Existing Paved Road; Add Paved Shoulder	Existing Paved Road; Add Sidepath	Existing Gravel Road; Add Signage	Existing Gravel Road; Add Sidepath	Existing Gravel Road; Pave Road	DNR Land; Add Trail	New Separated Trail; Secure ROW	New Trail on Levee; Secure ROW	Existing Facilities	Segment Cost
					53e	Keg Creek Corridor, Wabash Trace to Sharp Street in Glenwood								6.7			\$703,500
					54e	Sharp Street, L45 to Locust Street (L35)										0.9	\$0
					55e	Locust Street (L35), Sharp to US 34 interchange		1.0									\$369,000
					56e	L35, US 34 interchange to Kesterson Road			1.3								\$611,000
					57e	Kesterson Road/215 th Street to Painter Road	3.8										\$22,800
					58e	Painter Road, 215 th Street to Paddock Avenue						1.6					\$934,400
					59e	Paddock Road, Painter Road to L31						0.8					\$467,200
					60e	Paddock Road, L31 to Missouri River Levee					0.9						\$206,100
					61e	Missouri River Levee, Paddock Road to J10									6.1		\$866,200
					25x	Iowa 370, connecting L31 north and south			0.6								\$282,000
					26x	L31, Iowa 370 to L35 in Pacific Junction		8.7									\$3,210,300
					27x	L35 and L31 from L31 intersection to Pearl Avenue	0.5										\$3,000
					28x	L31, Pearl Avenue to US 34		0.8									\$295,200
					29x	US 34 at I-29 interchange		0.3									\$110,700
					30x	L31, US 34 to J10	3.8										\$22,800



Downtown Glenwood



Rural Mills County

Continued:

LCT Explorers Route	Express Routes	Alternate LCT Routes	Loops	Links	Map Key #	Segment	Existing Paved Road; Add Signage	Existing Paved Road; Add Paved Shoulder	Existing Paved Road; Add Sidepath	Existing Gravel Road; Add Signage	Existing Gravel Road; Add Sidepath	Existing Gravel Road; Pave Road	DNR Land; Add Trail	New Separated Trail; Secure ROW	New Trail on Levee; Secure ROW	Existing Facilities	Segment Cost
					5t	Sharp Street/Hawley Road, Locust Street to Deacon Road	0.4	1.8									\$666,600
					6t	Deacon Road and Ingraham Avenue, Hawley Road to L31						1.2					\$700,800
					7t	L35, Kesterson to L31 in Pacific Junction	0.6		1.2								\$567,600
					5r	US 34 Extension and Plattsmouth Bridge			4.3								\$2,021,000
					6r	Plattsmouth Link	0.4								2.9		\$414,200
Totals							9.5	12.6	7.4	0.0	0.9	3.6	0.0	6.7	9.0	0.9	\$12,474,400

Mills County: Alternate Routes

					6a	H12, Mineola Trailhead to Keg Creek crossing at L45 intersection		1.0									\$369,000
					7a	L45, H12 to Sharp Street in Glenwood		6.9									\$2,546,100
Totals							0.0	7.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	\$2,915,100

Fremont County Development Costs

Fremont County Summary	Total Mileage	Cost
Explorers Route	31.9	\$6,646,600
Express Routes	20.4	\$7,527,600
Bartlett Loop	2.5	\$262,500
Copeland Bend Loop	5.1	\$1,881,900
Hamburg Loop	9.2	\$144,400
Regional Connections	0.8	\$4,800
Fremont County Total:	69.9	\$17,500,000



Downtown Hamburg

LCT Explorers Route	Express Routes	Alternate LCT Routes	Loops	Links	Map Key #	Segment	Existing Paved Road; Add Signage	Existing Paved Road; Add Paved Shoulder	Existing Paved Road; Add Sidepath	Existing Gravel Road; Add Signage	Existing Gravel Road; Add Sidepath	Existing Gravel Road; Pave Road	DNR Land; Add Trail	New Separated Trail; Secure ROW	New Trail on Levee; Secure ROW	Existing Facilities	Segment Cost
					62e	Missouri River Levee, J10 (Bartlett access) to 135th Street									2.8		\$397,600
					63e	135th Street, Missouri River levee to L31					1.3						\$297,700
					64e	L31, 135th Street to 200th Street (Percival interchange)	6.1										\$36,600
					65e	200th Street, L31 to Copeland Bend WMA						2.4					\$1,401,600
					66e	Copeland Bend, 200th Street to south boundary of property							2.5				\$262,500
					67e	Missouri River Levee, south boundary of Copeland Bend property to L31 (old Highway 2)									4.1		\$582,200
					68e	L31, Missouri River Levee to Iowa 2 at 195th Street	1.5										\$9,000
					8a	L31, 200th Street to Iowa 2		5.1									\$1,881,900
					69e	Iowa 2, L31 to L40			2.4								\$1,128,000
					70e	L40, Iowa 2 to 275th Street	3.1										\$18,600
					71e	275th Street, L40 to L44 (Bluff Road) and Waubonsie west entrance						1.9					\$1,109,600
					31x	J10, L31 to L44		2.6									\$959,400
					32x	L44 (Bluff Road), J10 to Waubonsie west entrance (275th Street)		17.8									\$6,568,200
					72e	L44 (Bluff Road), 275th Street to Hamburg		3.8									\$1,402,200
					4L	Forney Lake Wildlife Area, L44 to L31							2.5				\$262,500



Waubonsie State Park, Fremont County



Hiking Trails at Waubonsie State Park. Fremont County

Continued:

LCT Explorers Route	Express Routes	Alternate LCT Routes	Loops	Links	Map Key #	Segment	Existing Paved Road; Add Signage	Existing Paved Road; Add Paved Shoulder	Existing Paved Road; Add Sidepath	Existing Gravel Road; Add Signage	Existing Gravel Road; Add Sidepath	Existing Gravel Road; Pave Road	DNR Land; Add Trail	New Separated Trail; Secure ROW	New Trail on Levee; Secure ROW	Existing Facilities	Segment Cost
					5L	J18, L31 to L44		2.8									\$1,033,200
					8t	L40, 275th Street to J64	4.3										\$25,800
					9t	J64, L44 in Hamburg to L40	3.5										\$21,000
					10t	J64, L40 to Hamburg Landing	1.0				0.4						\$97,600
					7r	Highway 2 Bridge, L-31 to Nebraska City	0.8										\$4,800
Totals							20.3	32.1	2.4	0.0	1.7	4.3	5.0	0.0	6.9	0.0	\$17,500,000

FUNDING TECHNIQUES

The LCT funding package uses many source. Numerous public and private grant programs exist, supplemented by a variety of innovative funding techniques. A discussion of some possible funding mechanisms follow.

NATIONAL PARK SERVICE – CHALLENGE COST SHARE PROGRAM

The Challenge Cost Share Program (CCSP) is designed to increase participation by qualified partners in the preservation and improvement of National Park Service natural, cultural, and recreational resources; in all authorized NPS programs and activities; and on national trails.

The CCSP requires a minimum 50% non-federal match in cash, goods, or services. Currently, the maximum CCSP award is \$30,000. Projects selected should be completed within one year.

One-third of CCSP funding is set aside for National Trails System projects supporting work under the National Trails System Act. National Trail System projects include those associated with National Scenic and Historic trails, National Scenic and Historic Trails in parks, National Recreation Trails, and rail-trails.

Contact:

Rachel McNamara
rachel_mcnamara@nps.gov
(202) 354-6922

NATIONAL FOREST FOUNDATION – MATCHING AWARDS PROGRAM

The Matching Awards Program (MAP) provides matching grants to organizations implementing action-oriented, on-the-ground stewardship and citizen-based science projects that benefit America’s National Forests and Grasslands. By matching NFF federal funds to non-federal dollars raised by award recipients, MAP effectively doubles the resources available to nonprofit partners for implementing these projects.

A common thread connecting the National Forest Foundation (NFF) program areas is an interest in action oriented projects that enhance the viability of natural resources while considering benefits to, and the involvement of surrounding communities. For the MAP, the NFF accepts applications from non-governmental, nonprofit organizations, universities and Native American tribes working on, or adjacent to, National Forests and Grasslands in a effort to implement on-the-ground conservation, restoration and citizen-based monitoring projects.

Contact:

Adam Liljeblad
(406) 542-2805, ext. 12

BIKES BELONG COALITION GRANT PROGRAM

The Bikes Belong Grants Program was established in 1999, and helps put more people on bicycles more often by awarding grants to important and influential projects that leverage federal, state, and local money and build momentum for bicycling. These projects include bike paths, rail trails, mountain bike trails, bike parks, BMX facilities, and large-scale bicycle advocacy initiatives.

Bikes Belong accepts grant requests for funding of up to \$10,000 for facility and advocacy projects. However, the program will not consider grant request in which Bikes Belong funding would amount to 50% or more of the project budget.

Contact:

Bikes Belong Coalition
PO Box 2359
Boulder, CO 80306
mail@bikesbelong.org

TRANSPORTATION ENHANCEMENTS PROGRAM

The Transportation Enhancements (TE) Program has been a staple of trail development in Iowa and across America. It offers funding to help expand transportation choices and enhance the transportation experience through twelve eligible activities. A 20 to 30% local match is required, depending on whether the project has regional or statewide significance. TE projects must relate to surface transportation and must qualify under one or more of the following categories.

- Pedestrian and bicycle facilities
- Pedestrian and bicycle safety and education activities
- Acquisition of scenic or historic easements and sites
- Scenic or historic highway programs including tourist and welcome centers
- Landscaping and scenic beautification
- Historic Preservation
- Rehabilitation and operation of historic transportation buildings, structures, or facilities
- Conversion of abandoned railway corridors to trails
- Control or removal of outdoor advertising
- Archeological planning and research
- Environmental mitigation of highway runoff pollution, maintain habitat connectivity
- Establishment of transportation museums

Contact:

Jim Nervig
Iowa Department of Transportation
Office of Systems Planning
800 Lincoln Way
Ames, IA 50010
(515) 239-1621
jim.nervig@dot.iowa.gov

FHWA – RECREATIONAL TRAILS PROGRAM

The Recreational Trails Program (RTP) provides funds to the States to develop and maintain recreational trails and related facilities for both non-motorized and motorized recreational trail uses. The RTP is an assistance program of the Department of Transportation’s Federal Highway Administration (FHWA). Federal transportation funds benefit recreation including hiking, bicycling, in-line skating, equestrian use, cross-country skiing, snowmobiling, off-road motorcycling, all-terrain vehicle riding, four-wheel driving, or using other off-road motorized vehicles.

Contact:

Yvonne Diller
Iowa Department of Transportation
Office of Systems Planning
800 Lincoln Way
Ames, IA 50010
(515) 239-1252
yvonne.diller@dot.iowa.gov

IOWA DOT – RECREATIONAL TRAILS PROGRAM

The State Recreational Trails Program funds public recreational trails. The grant requires a 25% local match and the trail must be maintained as a public facility for a minimum of 20 years. Proposed projects must be part of a statewide, regional, area wide, or local trail plan.

Due to a lack of funding for state fiscal year 2011, funding is not available for the July 1, 2010 and January 2, 2011 application deadlines. Future funding remains in doubt.

Contact:

Yvonne Diller
Iowa Department of Transportation
Office of Systems Planning
800 Lincoln Way
Ames, IA 50010
(515) 239-1252
yvonne.diller@dot.iowa.gov

IOWA CLEAN AIR ATTAINMENT PROGRAM

The Iowa Clean Air Attainment Program funds street, transit, or trail projects which help maintain Iowa’s clean air quality by reducing transportation related emissions. A 20% local match is required and application forms must be submitted with emission reduction calculations.

Contact:

Deb Arp
Iowa Department of Transportation
Office of Systems Planning
800 Lincoln Way
Ames, IA 50010
(515) 239-1681
debra.arp@dot.iowa.gov

Trail Maintenance

User Fees

User fees and even targeted local tax programs provide money for trails from the groups most likely to benefit, although payroll deductions have the potential to reach a greater number of trail supporters and a potentially more consistent funding base.

The Washington Trails Association has received over \$100,000 through voluntary payroll deductions in the last five years, allowing employees to donate to charitable organizations through payroll pledges. Through this, WTA spends less time fundraising and more time working toward a healthier trail system. WTA is a member of Earth Share of Washington, an alliance of 65 leading conservation and environmental organizations.



On the Wabash Trace Nature Trail, user fees are collected on the honor system from collection boxes at trailheads.

IOWA DNR – LAND & WATER CONSERVATION FUND

The Land and Water Conservation Fund (LWCF) Program is a federally funded grant program that provides match funds of 50% for outdoor recreation area development and acquisition. Iowa's cities and counties are eligible to participate. The program offers funding for a variety of outdoor recreational facilities including, skate parks, playgrounds, swimming pools, sports complexes, campgrounds, and multipurpose trails.

Contact:

Sandra Sampson
Department of Natural Resources
Wallace Building
502 East 9th Street
Des Moines, IA 50319
(515) 281-8004
Sandra.sampson@dnr.iowa.gov

IOWA DNR – REAP COUNTY CONSERVATION PROGRAM

The County Conservation Program provides money to counties for land easements or acquisition, capital improvements, stabilization and protection of resources, repair and upgrading of facilities, environmental education, and equipment. Expenditures are not allowed for single or multipurpose athletic fields or other organized sport facilities. The program provides 100% funding for eligible projects, so that no local match is required. Applications are accepted once a year on August 15th.

Contact:

Tammie Krausman
Iowa Department of Economic Development
200 East Grand Avenue
Des Moines, IA 50309
(515) 281-8382
Tammie.Krausman@dnr.iowa.gov

NPS – RIVERS, TRAILS, AND CONSERVATION ASSISTANCE PROGRAM

The RTCA program is part of the community assistance arm of the National Park Service, and supports community-led projects that conserve rivers, preserve open space, and develop trails and greenways. While RTCA does not provide grants for trail development, it acts as a catalyst by:

- Identifying resources
- Assisting in the planning process
- Converting ideas into actions
- Providing technical assistance

Contact:

Dave Thomson
601 Riverfront Drive
Omaha, NE 68102
402-661-1570

COMMUNITY ATTRACTION AND TOURISM PROGRAM

The Community Attraction and Tourism Program supports projects that promote recreational, cultural, educational or entertainment attractions that are available to the general public. Additional monies are available through the programs River Enhancement Community Attraction and Tourism Grant that supports projects geared specifically towards the enhancement of recreational opportunities on or near rivers or lakes within cities. There is no minimum or maximum award amounts for the program.

Contact:

Alaina Santizo
Vision Iowa/CAT Program Manager
Iowa Department of Economic Development
200 East Grand Avenue
Des Moines, IA 50309
(515) 725-3197
visioniowa@iowa.gov

CONSERVATION FUND – KODAK AMERICAN GREENWAYS PROGRAM

The Kodak American Greenways program is a “seed” grant program that provides up to \$2,500 in funding to organizations that developing new trail networks. Projects typically advance one or more of the following goals:

- Catalyze new greenway projects
- Assist grassroots greenway organizations
- Leverage additional money for conservation and greenway development
- Promote use and enjoyment of greenways

Contact:

The Conservation Fund
1655 N. Fort Myer Drive, Ste. 1300
Arlington, VA 22209
www.conservationfund.org

USDA/RURAL DEVELOPMENT – COMMUNITY FACILITIES LOAN

The Community Facilities Loan Program administers programs designed to develop essential community facilities for public use in rural areas. These facilities include libraries, childcare, hospitals, clinics, community centers, and transportation networks. Funding for projects is provided through one of three financial tools

- Direct Loans
- Guaranteed Loans
- Grants



Seasonal maintenance of roadways designated as bikeways should include sweeping and repair of cracks and potholes.



An education program for neighbors of the trail may reduce inappropriate use of the roadway, such as these garbage cans illegally placed in the bike lane



Grinding an inlay for striping improves adhesion and resistance to wear, especially from snow removal equipment.

Lewis and Clark Trail Management & Maintenance

This section discusses potential strategies LCT trail managers can employ to facilitate trail development and management efforts along the Lewis and Clark Multi-Use Trail in western Iowa. The strategies are based on challenges found in observing other multi-jurisdiction bicycle routes across North America. Challenges include long-term funding to support trail operations and maintenance, coordinating trail system development and management, and adopting consistent trail development and management mechanisms (e.g., adopted trail design guidelines, policies or plans) at the local level.

Typically the regional trail association or organizing agency (Iowa DOT, in the case of the LCT) does not own or manage the trail right-of-way upon which its trail is located. The following maintenance examples are gathered from the American Discovery Trail (ADT), the Mississippi River Trail (MRT) and the East Coast Greenway Alliance (ECGA). Each of these trails traverses multiple jurisdictions and each is overseen by a central organization, but developed and managed at a local level by other agencies.

These existing regional trails agencies do not own or manage trail right-of-way. Therefore, they rely on right-of-way from local roads, low volume highways and existing local trails, linking these segments to create a multi-jurisdictional right-of-way. States, counties and local municipal agencies provide the necessary on-going management. In many cases, the regional trail agency monitors the trail in an attempt to provide fundamentally consistent trail conditions for long distance trail users. The EGCA and some other regional trail organizations support the budget requests of its local agencies.

The EGCA has a long-range goal of creating an endowment fund. This endowment fund will be used to fund grants to local municipalities dealing with emergency maintenance issues and to build such trail amenities as rest areas, overlooks and other trail support features.

An organizational component unique to the East Coast Greenway is its State Committees which play an important role in building support at the state and local level, and recruiting volunteers to build and operate the trail. The Lewis and Clark Multi-Use Trail agencies

may benefit from such a committee structure, at the county level.

The EGCA also enjoys close relationships with various local trail initiatives such as the Eastern Trail Alliance in Maine and the Farmington Canal Rail to Trail Association in Connecticut. Both the ADT and the MRT rely heavily on local trail initiatives as well. These groups provide the energy to build the scores of local trail segments that the regional trail depends on for its right-of-way and provide for on-going operations and maintenance needs as well.

Recommendation. A dedicated non-profit trail organization should be established that can assist local implementation agencies with coordination of development, management and promotion of the Lewis and Clark Multi-Use Trail. The organization can act as a contracting agency for system-wide procurements, and may receive grants and other funds that public agencies are less likely to receive.

Operations and Maintenance

Importance of Proper Maintenance

Maintaining multi-use trails to a high standard is important for a variety of reasons:

Safety. Public agencies have a duty to protect the public welfare by maintaining facilities to a level that reduces potential safety hazards. This includes repairing damage on paths and bikeways that may pose a tripping or crash hazard, clearing snow in a timely manner (if snow-clearance policies are adopted), and preventing ice from forming on multi-use trails.

Universal Access. Public agencies are required by federal law to maintain public facilities so that they are accessible to people with disabilities. Small but abrupt vertical changes in level along a path or bikeway may not pose a safety hazard to able-bodied pedestrians, but may present an obstacle to people who are using wheelchairs or other mobility-assistive devices.

Attracting Use. Well-maintained facilities, with smooth surfaces, well-kept vegetation, and up-to-date signage will attract and sustain use.

Liability. Allowing hazardous conditions to exist along a path or bikeway exposes a local agency to potential lawsuits.

Protecting the Public Investment. Regular preventative maintenance on a path or bikeway (e.g. pavement preservation and periodic overlays) can extend the lifetime of the existing facility and delay the need for more expensive repairs.

Primary Maintenance Functions

Primary activities of maintaining multi-use trails include:

- Maintaining pavement quality through spot repairs, regular overlays and longer-term repaving
- Maintaining trail up to ADA standards
- Removal of litter and garbage on a timely basis
- Sweeping quarterly
- Vegetation trimming to provide clear access on a monthly basis
- Snow removal after storms
- Restriping as needed, usually annually
- Maintaining landscaping on a weekly or monthly basis
- Maintaining lighting features
- Repairing damage due to storms, floods, collisions and other unforeseen events
- Repairing and replacing wayfinding and other signing

Obstacles to Proper Maintenance

There are three main obstacles to successful multi-use trails maintenance programs. The first, and usually the most common issue, is a lack of dedicated funding. Grants are typically not available for maintenance activities, but are available for construction of new facilities. Second, proper equipment or appropriately trained personnel may not be available. For example, multi-use paths require narrow snowplows for snow removal, but these machines may not be owned by the jurisdiction. Third, there may be confusion or conflicts between different parties regarding whose responsibility it is to maintain bikeways and multi-use paths, and the exact duties that are required of the responsible party.

Maintenance Activities

Maintenance activities can be divided into basic maintenance and long-term maintenance.

Basic Maintenance

All of the agencies responsible for maintaining bikeways and trails perform activities that, at a minimum, include:

- Repairing pavement conditions on bicycle lanes or trails that pose a possible safety issue or that are not ADA compliant.
- Seasonal sweeping.
- Mud and debris removal after high water events.
- Regular clearing and trimming of vegetation.

Snow removal activities can vary significantly between agencies. In general, on-street bike facilities and community paths should be cleared after every snowstorm throughout the winter.

Agencies or districts with dedicated funding for maintenance generally provide more maintenance activities.

Long-Term Maintenance

Long-term maintenance includes major repairs, bridge replacement, slurry seals, overlays and re-paving. These activities are programmed into the local capital improvement plan and may be supported by regional or state funding. Each jurisdiction should maintain an up to date, prioritized list of current and upcoming long-term capital projects related to the development and maintenance of the facility.

Maintenance Challenges

A variety of challenges prevent agencies from maintaining trails to a high level. The primary challenge is a lack of funding, though there are some technical challenges related to clearing snow, cross-boundary coordination, and working with local property owners.

A summary of key maintenance challenges follows:

- *Most agencies pay for routine bikeway and path maintenance out of their maintenance and operations budget. Long-term replacement and major repairs due to unanticipated damage is often not included in capital improvement budgets resulting in longer facility closures and occasionally abandonment.*
- *Grant funding is often not available for maintenance activities.*
- *Snow removal.*
 - » Some agencies may not feel that path use is high enough in winter to warrant clearing snow.
 - » Snow removal from paths can be more demanding than from roadways. It must be removed far enough back from the pavement so that it does not melt, refreeze and create ice hazards. Sand and salt may not be permitted on trails because of their proximity to water increasing the costs of snow removal.
 - » Small plows, which have been purchased by some agencies, are not strong enough to clear heavy snows or densely packed snows.
 - » When clearing roads, snowplows clear snow and sand onto trails adjacent to roads. Often, the snow that is plowed onto bikeways is packed so hard that it is impossible to clear.

Maintenance Guidelines

A successful maintenance program requires continuity and a high level of citizen involvement. Regular, routine maintenance on a year-round basis will not only improve trail safety, but will also prolong the life of the trails. Maintenance activities required for safe trail operations should always receive top priority.

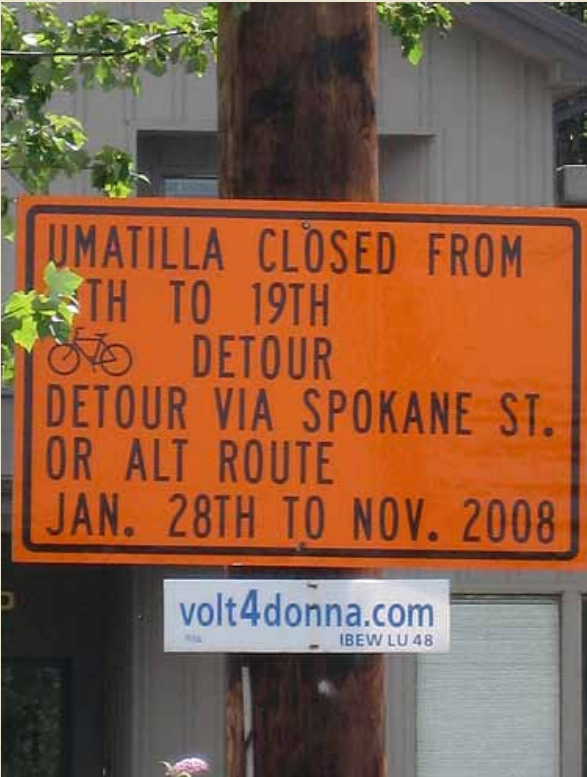
The Lewis and Clark Multi-Use Trail will consist of a variety of facility types, each with distinct maintenance requirements. The table below summarizes typical maintenance standards for regional trail systems:

Paved Multi-Use Path Maintenance

Cracks, ruts, edge erosion and water damage will need to be repaired periodically. In addition, vegetation control will be necessary on a regular basis. Where drainage problems exist along trails, ditches and drainage structures will need to be kept clear of debris to prevent wash outs. Inspections for erosion along the trails should occur immediately after storm events that bring flooding to the local area and can be coordinated with local roadway inspections. The trail surface should be kept free of debris, especially broken glass and other sharp objects, loose gravel, leaves and stray branches. Trail surfaces should be swept periodically to keep them clear of debris. Sweeping should be scheduled based on need. Path segments in forested areas will tend to accumulate surface debris such as leaves and branches at a faster rate than other path segments. These areas should be swept more frequently in order to maintain safe surface conditions on paved multi-use paths.



Maintenance Task	Suggested Frequency
Major damage response (fallen trees, washouts, flooding)	Immediate in response to need
Site furnishings; replace damaged components	As needed
Graffiti removal	Weekly; as needed
Shrub/tree irrigation for introduced planting areas	Weekly during summer months until plants are established
Trash disposal	Weekly during high use; twice monthly during low use
Litter pick-up	Weekly during high use; twice monthly during low use
Fencing repair	Inspect monthly for holes and damage, repair immediately
Pavement, striping and sign inspections	Seasonally (4 times/year)
Pavement sweeping/blowing	As needed; before high use season
Culvert inspection	Before rainy season; after major storms
Maintaining culvert inlets	Inspect before onset of wet season
Lighting repair	Annually
Waterbar maintenance (earthen trails)	Annually
Shoulder plant trimming (weeds, trees, branches)	Bi-annual (Fall and Spring), more during very high growth years.
Sign repair/replacement	1-3 years
Pavement markings replacement	1-3 years
Introduced tree and shrub plantings, trimming	1-3 years
Pavement sealing; pothole repair	5-15 years



Detours on rural bikeways can require significant out-of-direction travel for cyclist. Explicit directions and way-finding signing, comparable to the main route, should be implemented and maintained.



Thermo plastic striping has higher installation costs, offset in many applications by far superior service life.



Trail safety education and outreach are important means of reducing liability exposure and encouraging safe behavior.



Patrols encourage appropriate facility use.

On-Street Bicycle Lane Maintenance

While implementing bicycle facilities is important, keeping them in good condition is equally important. When a bicycle lane becomes filled with debris, cyclists are forced into the motor vehicle lane. Poor bicycle lane maintenance can contribute to accidents and deter potential cyclists unwilling to risk flat tires and skidding on roadways. Periodic inspections should be made of the on-street bicycle network with work being confined to spot fixes and damage response. Sweeping of on-street facilities should be coordinated with the management agency's roadway maintenance program to ensure that the roadway is cleared curb to curb. Activities are also often driven by maintenance requests from the public. Bridge sweeping is especially important where debris and litter often accumulates against the barrier obstructing the bike travel lane.

Natural Surface Trail Maintenance

In general, visibility between plantings at trail side should be maintained to give trail users clear views of their surroundings. Under story vegetation along trail corridors should not be allowed to grow higher than 36 inches. Tree species selection and placement should be made that minimizes vegetative litter on the trail. Vertical clearance along the trail should be periodically checked and any overhanging branches should be pruned to a minimum vertical clearance of 10 feet (12 feet where equestrians are anticipated). Vegetation 18-22 inches and above should be cleared to meet a 24-36 inch horizontal clearance minimum.

On soft-surface trails, the surface should be inspected and repaired to avoid erosion and tripping hazards. The management agency should correct or improve drainage to retain the integrity of the trail structure including the removal of trail edges where berms tend to build up and where uphill slopes erode onto the trails. In flat areas, the trail should be constructed to provide a surface with a crown or cross slope. Trails in hillside areas should be maintained to provide an outslope. Similar to paved multi-use paths, the trail surface should be kept free of debris, loose gravel, leaves and stray branches.

Temporary Trail Closures

Sections of the route may be closed from time to time for maintenance of the facility, or due to hazardous conditions such as

high water. Trail users should be notified and alternative routes identified during these closures. The following policies should be implemented before closing the trail:

- The management agency should post signs at all trail entrances on the impacted segments to be closed, indicating the duration of the closure.
- The management agency should keep the public informed and make every effort to keep the closure period as short as possible.
- The management agency should physically block the trail that is being closed with barriers and post "Trail Closed" signs.
- The management agency should provide detour signs and maps describing alternate routes.

The management agency should only re-open the trail upon inspection. Where obstructions remain, the management agency should provide warning signs for trail users to slow down or dismount where needed.

Trail Signing

Bike lanes, shared shoulders, bicycle boulevards and paths all have different signage types for wayfinding and regulations. Such signage is vulnerable to vandalism or wear, and requires regular maintenance and replacement as needed. A bi-monthly check on the status of signs should be performed with follow-up as necessary.

Construction signage should be placed in locations that do not obstruct the path of bicyclists or pedestrians, including bike lanes, wide curb lanes, or sidepaths. Signs may be placed at the street-side edge of sidewalks so as not to encroach onto a bike lane.

Detour and closure signage related to bicycle travel should be included on all bikeways where construction activities occur.

The East Coast Greenway Alliance provides consistent signage guidance for its local support network. The Lewis and Clark Multi-Use Trail agencies may want to fashion a similar guidance and post it on-line for use by its partners. Please see <http://www.greenway.org/signage.php> for more information.

Trail Monitoring and Safety

Properly designed and managed, the Lewis and Clark Multi-Use Trail will provide a reasonable level of safety and security. Additionally, studies have shown that high use is the most effective method of enhancing safety and security. While portions of the trail are expected to occur in rural areas, trails in isolated locations throughout Iowa have generally not had significant safety problems.

In order to maximize safety and functionality for users, and to minimize liability exposure for the management agencies, the trail design and maintenance should meet standards and guidelines identified by the Iowa DOT in the Iowa Trails 2000 Plan, MUTCD and the Americans with Disabilities Act (ADA) where feasible and appropriate.

Trail Patrols and Enforcement

Communities, neighbors and users are often very proud of their new trail facilities, especially long-distance routes and those with statewide identity. Enforcement of the rules and etiquette for most trails is self-enforcing by an engaged general public and enthusiastic user group with pride in ownership. For the first three (3) months after opening, the management agencies should patrol the trail on a daily basis, identifying enforcement and maintenance challenges and to modify adverse behaviors. After the first three months, the management agencies should patrol on an intermittent basis. The level of patrols should be based on reported incidents and problems.

Community Involvement with Trail Safety

Creating a safe trail environment goes beyond law enforcement officers and should involve the entire community. The most effective and most visible deterrent to anti-social activity on any trail is the presence of legitimate trail users. As a general pattern, introducing legitimate use on the trail right-of-way discourages undesirable behavior. Getting as many "eyes on the corridor" as possible is a key deterrent to undesirable activity on the trail. There are several components to accomplishing this as outlined in this section.

Provide Access to the Trail

Provide frequent access points to the trail. Access points should be inviting and signed to welcome the public. This includes access from trailheads, other trails, adjacent communities, at roadway crossings and destination points.

Good Visibility from Adjacent Neighbors

Neighbors adjacent to the trail provide 24-hour surveillance of the trail and can become a trail manager's ally. Though some screening and setback of the trail is often desirable, complete visual blocking of the trail from neighborhood view should be discouraged.

High Level of Maintenance

A well maintained trail sends a message to the public that the community cares about the trail. This message discourages undesirable activity along the trail.

Programmed Events

Events along the trail will help increase public awareness of the trail, and encourages good behavior, thereby bringing more people to the trail. Efforts should aim at raising public awareness while increasing support for the trail. Events might include kids' big-wheel races or a series of short walks led by long time residents or local leaders.

Community Projects

Community projects are the strongest means of creating a sense of ownership along the trail and they are perhaps the strongest deterrent to undesirable activity along the trail. Ideas for community projects include volunteer planting events, day long trail clean up and art projects.

Adopt-a-Trail Program

Many businesses and residential communities are located along the Lewis and Clark Multi-Use Trail. Neighbors of the trail often see the benefit of involvement in the trail development and maintenance. Businesses and developers may view the trail as an integral piece of site planning and thus be willing to take on some level of responsibility for the trail. Creation of an adopt-a-trail program should be explored to capitalize on this opportunity and build civic pride. The adopt-a-trail program could include an adopt-a-creek component to keep the local waterways clean from garbage and natural materials such as tree limbs and leaves.

Trail Safety Education and Outreach

On-going safety education is an important means of reducing liability exposure and encouraging safe behavior. Management agencies need to ensure that warning signs explaining the importance of staying on the authorized trail are prominently displayed and regularly maintained. Additionally, the management agencies could create trail brochures or initiate more formal education programs and engage in trail patrols.

Trail Brochures

Management agencies may consider developing, printing, and distributing brochures. Content may include: safety information, maps of existing and planned trails, walkways, bikeways, and other trail related facilities, as well as information encouraging

more local trips by foot, horse or bicycle. Maps should include transit stops to demonstrate how people might walk or bicycle to transit. Brochures should be available at trailheads, city halls, county offices, visitor centers, libraries, community centers and local cafes and bicycle shops.

Trail Patrols for User Outreach

Volunteer or professional trail patrols are also beneficial in improving trail safety. Patrols range from informal monthly clean-up and maintenance crews to daily patrols that provide maps, information and emergency assistance. The primary function of these patrols should be to educate trail users and to provide assistance when necessary. Patrols should also be equipped to alert emergency services quickly if needed. Above all, the presence of a patrol deters crime and improves users' enjoyment of the trail. Trail managers should be creative in using "friends of the trail" groups, local community organizations and law enforcement to maintain and monitor the trail.

Local Cost of Maintenance

Costs for maintaining paths vary widely, based on the level of maintenance provided by an agency, and how the agency calculates costs.

A high level of trail maintenance is critical to the overall success and safety of any trail system. Maintenance includes activities such as pavement stabilization, landscape maintenance, facility upkeep, sign replacement, fencing, mowing, litter removal, painting, and pest control. However, the benefits of a good maintenance program are not limited to the physical and biological features of the trails. Additional benefits include:

- A high standard of maintenance is an effective way to advertise and promote trails as a local and regional recreational resource.
- The psychological effects of good maintenance serve as an effective deterrent to vandalism, litter, and encroachments.
- Regular maintenance is necessary to preserve positive public relations between adjacent land owners and trail managing agencies.
- Good maintenance makes enforcement of regulations on the trails more efficient. The management agencies, local organizations and service groups will take pride in "their" trail and will be more apt to assist in protection of the trail system.
- A proactive maintenance policy will help improve safety along the trails.

Regional Funding Mechanisms

A variety of funding mechanisms have been used to different levels of success nationally. This section describes the funding associated with each.

Inclusion within Maintenance and Operations Budgets

Many agencies fund maintenance activities out of their existing maintenance and operations budget. While it is possible to structure a maintenance fund to increase with increasing facility mileage, most agencies do not do this.

Voter-Supported Bond Measures

This financial tool has been used to generate funding for the construction and maintenance of recreational facilities, including bicycle paths.

Business Improvement Districts

Business improvement districts (BIDs) are public/private partnerships used to promote individual business districts through a variety of means. A city, county or joint powers authority can establish a BID and levy annual assessments on businesses within its boundaries. To establish a BID, a majority of businesses must agree. In forming a BID, the boundaries, improvements and activities to be financed are established. These cannot be changed once the BID is formed.

Assessment Districts

Local government entities can form an assessment district to fund the construction and maintenance of public facilities, including bikeways and paths. The process begins with property owners who want an improvement signing a petition. The proposed district will include all property owners who will benefit from the proposed improvement. A public hearing is then held, and if a majority of property owners approve, the assessment district is established. Once the assessment district is approved, property owners within the assessment district are levied a special assessment in proportion to the share of the benefit they receive from the improvement.

Grant Funding

The majority of grant funding for bicycle and infrastructure projects is limited to capital improvement projects, and cannot be used for maintenance funding.

Maintenance Requirements as Part of Trail Construction Grants

Several grant sources for constructing shared-use paths require a maintenance schedule and funding source to be established before construction money will be awarded.

